Qiuyi Wu

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Highly driven statistician with 8 years of experience in data analysis. **Areas of interest:** functional data analysis, image processing, text mining, recommender system. **Professional Skills:** R (mainly), Python(mainly), SAS (basic), MATLAB(basic), SQL(basic), LaTeX, Statistics. **Frameworks/Libraries:** PyTorch, TensorFlow, scikit-learn, NumPy, pandas, transformers

EDUCATION

PhD Candidate, Statistics, University of Rochester, Department of Biostatistics and Computational Biology, US
Thesis: Image Processing with Optimally Designed Parabolic Partial Differential Equations — **2019 — 2024 (Expected)**
Master of Science, Applied Statistics, Rochester Institute of Technology, US
Thesis: Statistical Aspects of Music Mining – Native Dictionary Representation — **2016 — 2018**
Bachelor of Economics, Finance, Donghua University, China
Thesis: Impact of Index Futures On Stock Market Volatility - Based On GARCH Model — **2012 — 2016**

PROFESSIONAL EXPERIENCE

Data Scientist Intern [Python, SQL] — **Jun 2022 — Aug 2022**
Liberty Mutual Insurance — MA, US

- SuretyOpsNLP 0.1 Project: Predicting the profitability of construction projects via NLP & ML models
- NLP captures hidden signals of job profitability & contributes to benchmark model improvement and robustness

Research Intern [R, LaTeX] — **Jun 2019 — Aug 2020**
Argonne National Laboratory (ANL) — IL, US

- Project 1: Statistical wind conditions assessment across inland and off-shore US under future climate scenarios [paper published]
- Project 2: Estimate directional wind speed quantiles and quantify the uncertainty from internal variability & parameter sensitivity

RESEARCH EXPERIENCE

Student Statistical Consulting & Data Analysis for Clinical Projects [R, RMarkdown] — **Jun 2021 — Present**
University of Rochester Medical Center (URMC) — NY, US

- ECHO Projects: Immune Analysis; Growth Data Analysis; Infection Analysis; Cortisol Analysis [paper1] [paper2]
- Employ linear mixed effect models, multivariate analysis, PCA, CCA to draw conclusions from clinical data and recommend actions

Visiting Graduate Research Fellow [R, LaTeX] — **May 2018 — June 2019**
Statistical and Applied Mathematical Sciences Institute (SAMSI) & Duke University — NC, US

- Project 1: Use text mining & optimization algorithm to significantly reduce overlapping in the conference schedule [paper published]
- Project 2: Use topic modeling to design movie recommender system [paper accepted]

Research Assistant [R, MATLAB, LaTeX] — **Jan 2017 — May 2018**
Rochester Institute of Technology — NY, US

- Project 1: Explore automatic improvisation detection & genre identification of music via text mining and ML [paper submitted]
- Project 2: Create and implement a family of predictably optimal robust ensemble of echo state networks [paper published]

SELECTED COURSES AND CERTIFICATIONS

Graduate Level: High Dimensional Data Analysis, Generalized Linear Models, Data Mining, Semiparametric Inference, Bayesian Inference, Survival Analysis, Design of Experiments, Genomic Data Science, Analysis of Longitudinal Data, Statistical Software (R & SAS), Stochastic Processes, Numerical Analysis, Modeling Neural Responses to Natural Stimuli (NLP, Vision, Audition)
Certifications: Neural Networks and Deep Learning *(Coursera)*, Machine Learning *(Coursera)*

AWARDS & HONORS

Awards Gold Medal for Data Analytics Competition in UP-STAT Conference 2021 [link]; Best Student Presentation Award in ASA TAIG JSM Conference 2021 [link]; Gold Medal for Best Student Research Award in UP-STAT 2019; ASA NC chapter & AISC Young Researcher Award 2018 [link]; Gold Medal for Best Student Research Award in UP-STAT 2018; Young Scientific Leader Award in UP-STAT 2017-2018

Funds William Jackson Hall Graduate Student Fellowship (awarded annually to one PhD student for academic excellence) [link]
UR Dean's Ph.D. Fellowship in University of Rochester
RIT Merit Scholarship for Master Study

PUBLICATIONS

Published or Accepted:

2023 LeBlanc, P., Banks, D., Fu, L., Li, M., Tang, Z., **Wu, Q.** (2023). Recommender Systems: A Review. *Journal of the American Statistical Association (2023)*: 1-21. doi: 10.1080/01621459.2023.2279695

2023 Panisch, L., Murphy, H.,**Wu, Q.**, et al.(2023). Adverse childhood experiences predict diurnal cortisol throughout gestation. *Psychosomatic Medicine. 85(6), 507-516.*

2022 **Wu, Q.**, Bessac, J., Huang W., Wang, J (2022). A conditional approach for joint estimation of wind speed and direction under future climates. *Advances in Statistical Climatology, Meteorology and Oceanography 8.2: 205-224.*

2022 Murphy, H., Gu, Y., **Wu, Q.**, et al. Prenatal Diurnal Cortisol: Normative Patterns and Associations with Affective Symptoms and Stress. *Psychoneuroendocrinology (2022)*: 105856.

2021 Frigau, L., **Wu, Q.** (2021)., Banks, D. Optimizing the JSM Program. *Journal of the American Statistical Association (2021)*: 1-21. doi: 10.1080/01621459.2021.1978466

2018 **Wu, Q.**, Fokoue, E., Kudithipudi, D. (2018). An Ensemble Learning Approach to the Predictive Stability of Echo State Networks. *Journal Of Informatics And Mathematical Sciences*, 10(1 & 2), 181 - 199. doi: 10.26713/jims.v10i1-2.827

2018 **Wu, Q.** (2018). Statistical Aspects of Music Mining: Naive Dictionary Representation. *Thesis*. RIT Scholar Works. *Accessed from https://scholarworks.rit.edu/theses/9932*

Under Review or Archived:

2022 Murphy, H., et al. (2022). Examining the bidirectional relationship between cortisol and gestational weight gain across pregnancy (submitted to International Journal of Obesity)

2018 **Wu, Q.**, Fokoue, E. (2018). Naive Dictionary On Musical Corpora: From Knowledge Representation To Pattern Recognition. *arXiv preprint arXiv:1811.12802*

INVITED TALKS & SEMINAR

Invited Talks:

2023.03 "A conditional approach for joint estimation of wind speed and direction under future climates" presented in SIAM Southeastern Atlantic Section Conference at Blacksburg, US

2021.09 "Minimizing Conflicts of Interest: Optimizing the JSM Program" presented in Italian Statistical Society Classification and Data Analysis Group Conference at Florence, Italy

2021.02 "Text Mining and Music Mining" presented in Data Science Washington Statistical Society at DC, US [video link]

2018.10 "Machine Learning for Music Mining with LDA Model" presented in International Conference on Advances in Interdisciplinary Statistics and Combinatorics at Greensboro, US

Seminar:

2022.05 "Partial Differential Equation & Kernel Smoothing Modeling In Image Analysis" presented in UR Biostatistics Department Annual Student Workshop at Rochester, US

2018.10 "Data Fusion for Music Mining" presented in SAMSI Model Uncertainty Program Data Fusion Working Group at Durham, US

2018.02 "Topic Modeling with LDA Tutorial" presented in Graduate Seminar in Rochester Institute of Technology at Rochester, US

PROFESSIONAL SERVICE & VOLUNTEERISM

- **Session Chair**, "Approaches in Clustering for Analysis of Emerging Data Types", JSM, 2022
- **Committee Member**, ICSA 2020 Applied Statistics Symposium Photo Contest, 2021
- **Officer & Student Representative**, ASA Section on Text Analysis (previously Text Analysis Interest Group), 2020 - Present
- **Event Editor**, International Astrostatistic Association, 2018 - Present
- **Committee Member**, ICSA 2020 Applied Statistics Symposium Talent Show, 2020
- **Session Chair**, 8th Annual Conference of the Upstate New York Chapters of ASA, 2019
- **Journal Reviewer**, IEEE Transactions on Systems, Man and Cybernetics: Systems, 2019
- **Session Organizer**, Chair Session "Application of Text Mining", UpStat Conference, 2018
- **Judge** for Pre-College Statistical Data Analysis Competition, UpStat Conference, 2018
- **Judge** for Undergraduate Data Competition, ASA DataFest, 2018
- **Mentor** for Data Competition, ASA DataFest, 2017 - 2018
- **Session Organizer**, Chair Session "Environment and Health", UpStat Conference, 2017
- **Technical Translator**, Deep Learning for NLP at Oxford with Deep Mind, Big Data Digest, 2017
- **Volunteer** for Imagine RIT: Innovation + Creativity Festival, Imagine RIT, 2017
- **Peer Mentor**, CET Academic Programs, 2015 (Honored with Best Mentor via election)